WHAT IS CLAIMED IS:

1. A method of generating codes for a spread spectrum multiple access system, comprising the steps of:

selecting a first code comprising $[a_0, a_1, a_2, \cdots, a_{N-1}]$, where N is an integer larger than one;

choosing a plurality of basic rotation angles comprising $\alpha_1, \alpha_2, \cdots, \alpha_{N-1}$;

producing, from the first code and an integer multiple of the plurality of basic rotation angles, a second code that is substantially orthogonal with the first code, the second code comprising $[a_0, a_1 e^{jm\alpha_1}, a_2 e^{jm\alpha_2}, \cdots, a_{N-1} e^{jm\alpha_{N-1}}]$, wherein m is an integer.

2. The method of claim 1, wherein the producing step comprises (the step of) rotating elements of the first code according to the integer multiple of the plurality of basic rotation angles.

3. The method of claim 1, further comprising (the step of) producing, from the first code $\mathbf{a}_0$ and integer multiples of the plurality of basic rotation angles, a plurality of codes each being orthogonal with the first code.

4. The method of claim 1, wherein the selecting step comprises selecting a code having real number elements each having a same absolute value.

5. The method of claim 1, wherein the selecting step comprises selecting a code having complex number elements each having a same modulus value.

6. The method of claim 1, wherein the selecting step comprises selecting a code having a real number element and a complex number element, the real number element having a same absolute value as a modulus value of the complex number element.

7. The method of claim 1, wherein the choosing step comprises choosing a plurality of rotation angles whose sum equals to an integer multiple of 2π..

8. The method of claim 1, wherein the choosing step comprises calculating the basic rotation angles $\alpha_1, \alpha_2, \cdots, \alpha_{N-1}$ by:

$$\alpha_k = \frac{2k\pi}{N} \quad k = 1,2,\cdots,N-1.$$

9. A method of generating codes to be used as an orthogonal code group by a spread spectrum multiple access system, the method comprising the steps of:

selecting a first code $\mathbf{a}_0$ comprising $[a_0, a_1, a_2, \cdots, a_{N-1}]$;

choosing a plurality of basic rotation angles comprising $\alpha_1, \alpha_2, \cdots, \alpha_{N-1}$;

producing, from elements of the first code $\mathbf{a}_0$ and integer multiples of the plurality of basic rotation angles, a plurality of codes that are substantially orthogonal with the first code $\mathbf{a}_0$, the plurality of codes comprising:

$$\mathbf{a}_1 = \left[a_0, a_1 e^{j\alpha_1}, a_2 e^{j\alpha_2}, \cdots, a_{N-1} e^{j\alpha_{N-1}}\right]$$
$$\mathbf{a}_2 = \left[a_0, a_1 e^{j2\alpha_1}, a_2 e^{j2\alpha_2}, \cdots, a_{N-1} e^{j2\alpha_{N-1}}\right]$$
$$\vdots$$
$$\mathbf{a}_{N-1} = \left[a_0, a_1 e^{j(N-1)\alpha_1}, a_2 e^{j(N-1)\alpha_2}, \cdots, a_{N-1} e^{j(N-1)\alpha_{N-1}}\right].$$

10. The method of claim 9, wherein the producing step comprises (the step of) rotating elements of the first code $\mathbf{a}_0$ by integer multiples of the plurality of basic rotation angles to produce the plurality of codes.

11. The method of claim 9, wherein the selecting step comprises selecting a code having real number elements each having a same absolute value.

12. The method of claim 9, wherein the selecting step comprises selecting a code having complex number elements each having a same modulus value.

13. The method of claim 9, wherein the selecting step comprises selecting a code having real number elements and complex number element, the real number elements having a same absolute value as a modulus value of the complex number elements.

14. The method of claim 9, wherein the choosing step comprises choosing a plurality of rotation angles whose sum equal to an integer multiple of 2π..

15. The method of claim 9, wherein the choosing step comprises calculating the basic rotating angles $\alpha_1, \alpha_2, \cdots, \alpha_{N-1}$ by:

$$\alpha_k = \frac{2k\pi}{N} \quad k = 1,2,\cdots,N-1.$$

16. The method of claim 9, wherein the choosing step comprises determining a solution of:

$$\begin{cases} |a_{00}|^2 + |a_{01}|^2 e^{j\alpha_1} + |a_{02}|^2 e^{j\alpha_2} + \cdots + |a_{0N-1}|^2 e^{j\alpha_{N-1}} = 0 \\ |a_{00}|^2 + |a_{01}|^2 e^{j2\alpha_1} + |a_{02}|^2 e^{j2\alpha_2} + \cdots + |a_{0N-1}|^2 e^{j2\alpha_{N-1}} = 0 \\ \vdots \\ |a_{00}|^2 + |a_{01}|^2 e^{j(N-1)\alpha_1} + |a_{02}|^2 e^{j(N-1)\alpha_2} + \cdots + |a_{0N-1}|^2 e^{j(N-1)\alpha_{N-1}} = 0 \end{cases}.$$

17. A method of generating codes to be used as an orthogonal code group by a spread spectrum multiple access system, the method comprising the steps of:

selecting a first code $\mathbf{a}_0(\varphi_0)$ with an initial phase angle of φ_0, the first code $\mathbf{a}_0(\varphi_0)$ comprising $\left[a_{00}e^{j\varphi_0}, a_{01}e^{j\varphi_0}, a_{02}e^{j\varphi_0}, \cdots, a_{0N-1}e^{j\varphi_0}\right]$;

choosing a plurality of basic rotation angles comprising $\alpha_1, \alpha_2, \cdots, \alpha_{N-1}$; and

producing, from elements of the first code $\mathbf{a}_0(\varphi_0)$ and an integer multiple of the plurality of basic rotation angles, a second code having an initial phase angle of φ_1, wherein the second code $\mathbf{a}_1(\varphi_1)$ is substantially orthogonal with the first code $\mathbf{a}_0(\varphi_0)$, and wherein the second code $\mathbf{a}_1(\varphi_1)$ comprises $\left[a_{00}e^{j\varphi_1}, a_{01}e^{j(\varphi_1+m\alpha_1)}, a_{02}e^{j(\varphi_1+m\alpha_2)}, \cdots, a_{0N-1}e^{j(\varphi_1+m\alpha_{N-1})}\right]$.

18. The method of claim 17, wherein the producing step comprises (the step of) rotating elements of the first code $\mathbf{a}_0(\varphi_0)$ according to the integer multiple of the plurality of basic rotation angles.

19. The method of claim 17, further comprising (the step of) producing, from the first code $\mathbf{a}_0(\varphi_0)$ and integer multiples of the plurality of basic rotation angles, a plurality of codes each being orthogonal with the first code $\mathbf{a}_0(\varphi_0)$ and each having an initial phase shift.

20. A method for generating orthogonal code groups for a spread spectrum multiple access system, the method comprising the steps of:

selecting a first orthogonal code group B^{T_0} with M sequences each having N elements, the first orthogonal code group B^{T_0} comprising $\begin{bmatrix} \mathbf{b}_0^{T_0} \\ \mathbf{b}_1^{T_0} \\ \vdots \\ \mathbf{b}_{M-1}^{T_0} \end{bmatrix}$, where

$$\mathbf{b}_m^{T_0} = [b_{m0}, b_{m1}, b_{m2}, \cdots, b_{mN-1}], \quad m = 0,1,2,\cdots, M-1,$$

choosing a plurality of basic rotation angles comprising $\alpha_1, \alpha_2, \cdots, \alpha_{N-1}$;

rotating elements of said M sequences by an integer multiple of the plurality of basic rotation angles to produce a second orthogonal code group B^{T_n} that comprises

$\begin{bmatrix} \mathbf{b}_0^{T_n} \\ \mathbf{b}_1^{T_n} \\ \vdots \\ \mathbf{b}_{M-1}^{T_n} \end{bmatrix}$, and where

$\mathbf{b}_m^{T_n} = [b_{m0}, b_{m1}e^{jn\alpha_2}, b_{m2}e^{jn\alpha_2}, \cdots, b_{mN-1}e^{jn\alpha_{N-1}}]$, $n = 0,1,\ldots,$N-1 and $m = 0,1,\ldots,M-$ 1.

21. The method of claim 20, further comprising (the step of) producing, from the first orthogonal code group B^{T_0} and integer multiples of the plurality of basic rotation angles, a plurality of code groups each being orthogonal with the first code orthogonal code group B^{T_0}.

22. The method of claim 20, wherein the selecting step comprises selecting a code group having real number elements each having a same absolute value.

23. The method of claim 20, wherein the selecting step comprises selecting a code group having complex number elements each having a same modulus value.

24. The method of claim 20, wherein the selecting step comprises selecting a code group having real number elements and complex number elements, the real number elements having a same absolute value as a modulus value of the complex number elements.

25. The method of claim 20, wherein the choosing step comprises choosing a plurality of rotation angles whose sum equal to an integer multiple of 2π..

26. The method of claim 20, wherein the choosing step comprises calculating the basic rotation angles $\alpha_1, \alpha_2, \cdots, \alpha_{N-1}$ by:

$$\alpha_k = \frac{2k\pi}{N} \quad k = 1,2,\cdots,N-1.$$

27. The method of claim 20, wherein the choosing step comprises determining a solution of:

$$\begin{cases} |b_{m0}|^2 + |b_{m1}|^2 e^{j\alpha_1} + |b_{m2}|^2 e^{j\alpha_2} + \cdots + |b_{mN-1}|^2 e^{j\alpha_{N-1}} = 0 \\ |b_{m0}|^2 + |b_{m1}|^2 e^{j2\alpha_1} + |b_{m2}|^2 e^{j2\alpha_2} + \cdots + |b_{mN-1}|^2 e^{j2\alpha_{N-1}} = 0 \\ \vdots \\ |b_{m0}|^2 + |b_{m1}|^2 e^{j(N-1)\alpha_1} + |b_{m2}|^2 e^{j(N-1)\alpha_2} + \cdots + |b_{mN-1}|^2 e^{j(N-1)\alpha_{N-1}} = 0 \end{cases}$$

$$m = 0,1\cdots,M-1.$$

28. A communication system, comprising:

a first communication unit configured to generate first spread data with a first code comprising $\left[a_0, a_1 e^{jk\alpha_1}, a_2 e^{jk\alpha_2}, \cdots, a_{N-1} e^{jk\alpha_{N-1}}\right]$, where $\left[a_0, a_1, a_2, \cdots, a_{N-1}\right]$ denotes a spread spectrum multiple access code, where $\alpha_1, \alpha_2, \cdots, \alpha_{N-1}$ denote a plurality of rotation angles, and where k denotes a first integer.

29. The communication system of claim 28, wherein the first communication unit is configured to generate second spread data with a second code comprising $\left[a_{00}, a_{01} e^{jm\alpha_1}, a_{02} e^{jm\alpha_2}, \cdots, a_{0N-1} e^{jm\alpha_{N-1}}\right]$, where m denotes a second integer.

30. The communication system of claim 29, further comprising:

a second communication unit configured to receive the first spread data and to de-spread the first spread data with the first code.

31. The communication system of claim 30, further comprising:

a third communication unit configured to receive the second spread data and to de-spread the second spread data with the second code.

32. The communication system of claim 29, wherein the first communication unit comprises memory for storing the first code and for storing the second code.

33. The communication system of claim 29, wherein the first communication unit comprises a code generator for generating the first code and the second code.

34. The communication system of claim 30, wherein the second communication unit comprises memory for storing the first code.

35. The communication system of claim 30, wherein the second communication unit comprises a code generator for generating the first code.

36. A device for use in a communication network, the device comprising:

a memory unit having stored therein a pre-determined spread spectrum multiple access code comprising $[a_0, a_1, a_2, \cdots, a_{N-1}]$ and a plurality of pre-determined rotation angles comprising $\alpha_1, \alpha_2, \cdots, \alpha_{N-1}$;

a code generator coupled to the memory unit and configured to generate a spread spectrum multiple access code comprising $[a_0, a_1 e^{jk\alpha_1}, a_2 e^{jk\alpha_2}, \cdots, a_{N-1} e^{jk\alpha_{N-1}}]$, where k denotes a pre-determined integer; and

a spreader circuit configured to receive data and to spread the received data with the spread spectrum multiple access code.

37. A device for use in a communication network, the device comprising:

a memory unit having stored therein a pre-determined spread spectrum multiple access code comprising $[a_0, a_1, a_2, \cdots, a_{N-1}]$ and a plurality of pre-determined rotation angles comprising $\alpha_1, \alpha_2, \cdots, \alpha_{N-1}$;

a code generator coupled to the memory unit and configured to generate a spread spectrum multiple access code comprising $[a_0, a_1 e^{jk\alpha_1}, a_2 e^{jk\alpha_2}, \cdots, a_{N-1} e^{jk\alpha_{N-1}}]$, where k denotes a pre-determined integer; and

a de-spreader circuit configured to de-spread the demodulated data using the spread spectrum multiple access code.

38. A device for use in a communication network, the device comprising:

a memory unit having stored therein a pre-determined spread spectrum multiple access code comprising $[a_0, a_1 e^{jk\alpha_1}, a_2 e^{jk\alpha_2}, \cdots, a_{N-1} e^{jk\alpha_{N-1}}]$, where $[a_0, a_1, a_2, \cdots, a_{N-1}]$ denotes a pre-determined spread spectrum multiple access code, and where $\alpha_1, \alpha_2, \cdots, \alpha_{N-1}$ denote a plurality of pre-determined rotation angles; and

a spreader circuit configured to receive data and to spread the received data with the spread spectrum multiple access code.

39. A device for use in a communication network, the device comprising:

a memory unit having stored therein a pre-determined spread spectrum multiple access code comprising $\left[a_0, a_1 e^{jk\alpha_1}, a_2 e^{jk\alpha_2}, \cdots, a_{N-1} e^{jk\alpha_{N-1}}\right]$, where $\left[a_0, a_1, a_2, \cdots, a_{N-1}\right]$ denotes a pre-determined spread spectrum multiple access code, and where $\alpha_1, \alpha_2, \cdots, \alpha_{N-1}$ denote a plurality of pre-determined rotation angles; and

a de-spreader circuit configured to de-spread the demodulated data using the spread spectrum multiple access code.

40. A spread spectrum communication network configured to operate in a first pre-defined territory and a second pre-defined territory, the network comprising:

a first communication unit located in the first territory and configured to spread data using a first code of a first orthogonal code group B^{Tk} that includes M codes comprising

$$\begin{bmatrix} \mathbf{b}_0^{T_k} \\ \mathbf{b}_1^{T_k} \\ \vdots \\ \mathbf{b}_{M-1}^{T_k} \end{bmatrix}$$

, where $\mathbf{b}_m^{T_k} = \left[b_{m0}, b_{m1} e^{jk\alpha_2}, b_{m2} e^{jk\alpha_2}, \cdots, b_{mN-1} e^{jk\alpha_{N-1}}\right]$, where

$\left[b_{m0}, b_{m1}, b_{m2}, \cdots, b_{mN-1}\right]$ denotes a base code, where k denotes an integer, and where m denotes an integer smaller than M-1; and

a second communication unit located in the second territory and configured to spread data using a second code of a second orthogonal code group B^{Tn} that includes a plurality of codes comprising

$$\begin{bmatrix} \mathbf{b}_0^{T_n} \\ \mathbf{b}_1^{T_n} \\ \vdots \\ \mathbf{b}_{M-1}^{T_n} \end{bmatrix}$$

, where

$\mathbf{b}_m^{T_n} = \left[b_{m0}, b_{m1} e^{jn\alpha_2}, b_{m2} e^{jn\alpha_2}, \cdots, b_{mN-1} e^{jn\alpha_{N-1}}\right]$ and where n denotes an integer different from k.

41. The spread spectrum communication network of claim 40, further comprising a third communication unit located in the first territory and configured to spread data using a third code of first orthogonal code group B^{Tk}.

42. The spread spectrum communication network of claim 41, further comprising a fourth communication unit located in the second territory and configured to spread data using a fourth code of the second orthogonal code group B^{Tn}.